B. AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows with reference to the paragraph numbers set forth in Patent Application Publication US 2002/0120638 A1:

[0054] The general-purpose computer 18 also can include several other components known generally to those skilled in the art as the motherboard, interfaces, adapters and controllers. For example, a network adapter 45 may be utilized to provide a communication means or to couple the general-purpose computer 18 to one or more other general-purpose computers, one or more workstations, or more mainframe computers or servers distributed throughout the distributed information system 10. Also, a parallel interface 46 may be provided for coupling the general-purpose computer 18 to various printers 38 and plotters. Furthermore, a serial interface 48 may be provided for interfacing a communication device, such as a modem 36 to the general-purpose computer 18. In addition, a video graphics adapter 50 may be utilized to couple the general-purpose computer 18 to the monitor 44. Moreover, a storage device controller ~~52~~ 51, e.g., a hard disk drive controller, a floppy disk drive controller or an optical disk drive controller, may be utilized for controlling the hard disk/floppy disk drive 32, the optical disk drive 28, and the like.

[0072] In one embodiment, as illustrated in FIG. 4, the ECP 64 and/or the switch 58 interfaces with the switch-master 66. The switch-master 66 is an electronic device that operates under the control of a UNIX operating system, for example. Its function is to take a feed ~~145~~ 147 coming from the ECP 64 that the AMA is teleprocessing. In addition, the telecommunication company's billing department uses the switch-master 66 for collecting call records 62. Moreover, the switch-master 66 can provide feeds 68 for detecting roamers 70, frauds 72 and other functions 74. The switch-master 66 is generally contained within a building at a particular telecommunication cell site. It is not part of the manufacturer's equipment, such as LUCENT, ERICSSON, nor is it part of the switch 58. The switch-master 66 is a self-contained electronic device that performs its own set of functions.

[0081] In one embodiment, the electronic control processor ~~6~~4 (ECP) is in communication with or coupled through a connection 91 to one or more digital cellular switches 58 (DCS). The ECP 64 and the DCSs 58 are located at a cell site 86 located in a given geographic region. For example, in the state of Florida there may be a cell site 88 located in West Palm Beach, a cell site 88 in Ft. Lauderdale, and so on. The ECP 64 is in communication with the switch-master 66. Physically, the switch-master 66 may be located remotely from the site 86 or may be contained in proximity of the ECP 64, within the same building for example. The ECP 64 is also in communication with the general-purpose

computer 18 executing the instructions of one or more computer software programs 20 therein. For example, the instructions of a client computer software program 94 may be executing in the general-purpose computer 18 in conjunction with the instructions of a master computer software program 90 on the workstation 26. In addition, the instructions of one or more child computer software programs 92 may also be executing in the general-purpose computer 18 in order to continually capture and process call processing failure data occurring either at the ECP ~~side 92~~ 64 or at the DCS ~~side 94~~ 58 of a given cell site 86, 88 within a telecommunication system.

[0086] One embodiment of the ECP 64 that controls multiple switches 58 can be adapted to receive information from the switch-master 66. Further in one embodiment, the ECP 64 also can monitor any call processing failure records. Accordingly, a telecommunication system performance management team member, or system user at the central office, is able to view the failure data messages occurring at the ECP 64 on a real-time basis. For example, in implementations using a switch 58 manufactured by the LUCENT COMPANY, a feed 96 can be established between the ECP 64 and the general-purpose computer 18. The call processing failure records, and various other types of messages depending on the configuration of the ECP 64, are then sent to a specific port 98. The port 98 can be adapted in order to capture and receive the call processing failure records and then transmit the failure data messages to the

general-purpose computer 18 that the user is logged into. Certain portions of the failure data messages and other information can then be stored into specific tables 100 ~~102~~ having fields ~~100~~ 102 in the SQL database server 16, for example.

[0088] The physical location of the ECP 64 may vary without departing from the scope of the invention. In general, the ECP 64 can reside within the same building in which the cellular switch 58 resides. The total number of cellular switches 58 that are located at a particular location 86, 88, 89 will vary depending upon the telephone call traffic for the particular geographic region 86, 88, 89 in which the switches 58 are located. For example, some regions may have three or more switches 58 within the same building or the switches 58 may be spread out in separate buildings throughout the geographic region 86, 88, 89. For each switch 58 there can be provided separate output ports 104. For example, instructions of the child software program 92 can be executed for carrying out the function of receiving and capturing information from each separate switch port 104. Accordingly, there can be provided separate output ports 104 for each individual switch 58 handling a particular geographic region 86, 88, 89.

[0093] While the child software program 92 continually captures call processing failure records at blocks 120, 122, the master software program 90, at block 128, ensures that the call processing failure records are continually

received. If the master software program 90 detects that, for some reason, any one of the currently executing instances has a problem, or if it detects that the LAN connection 145 is down, the master software program 90, at block 129, will stop the execution (e.g., close) of every instance of the software programs currently executing, and, the master software program 90, at block 131, will then continually try to reinitiate the session. Meanwhile, the child software program 92, upon continually capturing the call processing failure records, filters the captured data at block 124 and at block 126 stores the filtered captured data to a storage device 22 that is in communication with the general-purpose computer 18.

[0103] In one embodiment, the user can invoke a software program 20 and execute instructions associated therewith for querying the database 22. For example, the user can query the database 22 based on a specific failure type or run a query based on a specific directory number. In accordance with the specific query, the system responds by showing the user the number of telephone call failures. For example, the output can illustrate that a particular telephone number queried had multiple failures, e.g., 128 ~~because~~ before midnight. Accordingly, the user can readily deduce that something has gone wrong with that particular cellular telephone. In another example, the database can be queried based on the type of cellular telephone and call failures can be retrieved and displayed accordingly. Furthermore, the user can query the database 22 based on a variety of other failures, for example, hand-off failures between cell sites. As discussed

above, the user has the option of viewing the failure reports in a number of canned report formats, which are provided by the system 56.

[0106] Generally, users have three tools that they rely on for troubleshooting, namely, the graphical output, the investigation screen and the paging signal broadcast output. Thus, the user has the capability of graphing the call processing failure records and generating an output in the form of a graph. Furthermore, the investigation screen provides the user with the capability of setting up various thresholds and thereby broadcasting a paging signal to a remote wireless paging device based on a predetermined, user selectable ~~100~~ condition. Such paging broadcasts are tracked by the system 56 and an investigation number is tagged to the broadcast. Accordingly, the person or wireless telecommunication device that was signaled can call back into the central office, specify the investigation number and the user will be able to show them all of the failures that are associated with that specific investigation number. Those skilled in the art will appreciate that any identifiers such as an investigation number, a cell name and the like may be tagged to the paging signal broadcast for reference purposes.

[0110] Upon receiving the one or more dial digits, the general-purpose computer 18 determines whether to analyze the dial digits in accordance with the user's instructions at block 154. If the general-purpose computer 18 has been

programmed to analyze the dial digits, at block 156, the telephone dial digits are parsed and at block 158 a report is generated in accordance with a predetermined criteria as programmed by the user. If a determination is made at block 154 not to analyze the dial digits at that time, the one or more dial digits, at block 160, are stored in the database 22 coupled to the general-purpose computer 18.

[0117] Those skilled in the art will appreciate that the user, or users, of the system 56 and computer software programs 20 include various people from various departments for manipulating telecommunication call records 62 of a telecommunication company or may include various people associated with a telecommunication company. For example, there are computer programs 20 that are useful to users from a fraud department of a telecommunication company for manipulating call records 62 in order to detect any sort of fraud being committed by the subscriber 144. One reason the fraud department finds the call records 62 useful is because certain dialing patterns can be associated with an act of fraud. For example, a call record 62 showing that the subscriber 144 within the same cell site has called "time of day" and has repeatedly hung up as soon as the call was answered can be an indication of someone trying to clone the telecommunication device used to make the call to time of day. Whenever these types of calls occur at a higher ~~the~~ frequency there is a higher the likelihood that

the caller was attempting to clone the telecommunication device and thereby committing an act of fraud.

[0135] In one embodiment, there can be provided a computer software program 20 for monitoring the other software programs whose instructions are being executed. In one example, the monitoring software program is a master program 90 that can be executed on workstation 26, the server 16 or any general-purpose computer 18 connected to the network 24. The master software program ~~92~~ 90 provides the functionality for allowing the user to see what the status is of all the other software programs 20 that are executing. For example, the user can monitor the last call record 62 that was received, the last time stamp that was received and how many minutes difference there are between the receipt of the last all record 62 and the current time and it provides the user with this information on a in real-time basis.

[0137] One embodiment of the computer software programs 20 also can perform additional procedures. For example, the software programs 20 can perform database cleanup and maintenance. Furthermore, because telephone call records 62 are being kept for extended periods, for example, 10 to 13 weeks worth of information is kept, the software programs 20 also can take the oldest call records 62 and remove them from the database 22. In other words, instead of saving the oldest call records 62, they are removed from the database 22 and

the database 22 is maintained on a rolling 10 to 13 week basis depending on user-selectable ~~100~~ options. Those skilled in the art will appreciate that the general-purpose computer 18, the workstation 26, the shared server 14 or any other computer that is in communication with the database 22 may execute the above cleanup and maintenance software programs.

[0154] FIG. 7B illustrates one embodiment of an output display of a table shown when the user executes or runs a particular query. Accordingly, the user sees a grid 174 or a matrix within the display 44 output screen. Within the grid ~~174~~ 173 the user sees the various information illustrated. For example, there can be a call type 176 or there can be an NPA 178, the dialed number (NXX) 180, the failure type 182, the initial cell site 184 that the call originated from, and the like. As illustrated in FIG. 7B, the user will actually see one or more particular call records 62. The software program then takes this one step further and color-codes the grid ~~172~~ 173 so that the user can look at it and at a glance will be able to determine which call records 62 are incoming records, which call records 62 are outgoing records, which call records 62 are tandem records, which call records 62 are slave records and so on. Those skilled in the art will appreciate that the user can access the call records 62 by clicking on any one of the records identifiers on the grid ~~174~~ 173 displayed on the screen. Accordingly, the selected call record 62 is expanded and shown in a more detailed form. The more detailed form of the cell record 62 can show, for example, the call type 176 rather than the

dialed number NXX 180, the originating call or the terminated call. The system can take many of the call records 62 fields and parse them into text that the user can read.

[0155] For example, there may be a field for the failure type 182 having a number four within the call record 62 field. Because the number four does not reveal much information about the failure type 182, the user can expand the field associated with the failure type 182. A failure type such as that a call was dropped will appear on the grid ~~174~~ 173. Further, if one of the fields for the initial cell 184 is displayed, this may tell the user that the call was originated from cell A, for example. The software program provides an additional button for the user to click on for expanding that information and return to the main database 22. From there, the user is provided with information about that particular cell. For example, the user is provided with information about where the cell is located, its latitude, its longitude and its address. Furthermore, the user can be provided with information about what phase on the cell the call was placed on. Moreover, the user can be provided with the path through the switch 58 and what hardware was used during the call. The software program is thus a useful troubleshooting tool for the user.

[0172] The DD_MON software program provides the user with a real-time summary of system 56 activities. It also provides the user with a number of

call records 62 that are currently stored in the system 56 database 22. The DD_MON program shows the user the number of call records 62 that were inserted into the database 22 per second. At a glance, it can show the user all of the child programs 92 that are executing and other processes that are executing. It also provides to the user a time stamp of the last call record 62 and when the child program 92 actually made the entry. For example, by looking at every time the child program 92 writes to the table 100, it writes not only what the current time is but it also writes what the current call record 62 is. Therefore, by glancing at the table output grid 100, ~~174'~~ 173, the user can tell whether the current time is recent or whether it is actually writing to the table 100. Furthermore, the user can tell how far behind the system 56 is in parsing call records 62 and how many call records 62 it is processing per second or per hour based on current activity.

[0188] As illustrated in FIG. 11B, one embodiment of the system 206 for managing call records 62 requested through court orders generally sends all records 62 associated with active court-ordered requests. It also can check the start and stop dates of specific court orders prior to sending the call records 62. At block 208 a request to activate certain call records 62 through court order is received from the switch 58. Once the request to activate certain call records 62 is received, at block 210 the system generates and formats an e-mail message and a facsimile. The e-mail message and the facsimile are then transmitted to the originator of the court-ordered request, for example. Once the e-mal and

facsimile have been transmitted, at block 212 the system 206 activates the change in the call records 62 database 22 and begins retrieving call records 62 that have been requested by way of court order. Previously this was done by manually inputting the messages into the switch on a daily basis. For example, in the system 214 of FIG. 11A, a switch ~~engineer~~ manager 216 would request the records daily from the switch 58, ~~and~~ manually process the records by way of facsimile transmission to the government agency, and store the records in a database server 16. The system 214 also includes a SMART application 216 for receiving billing information for an active court order.